

IN THE CLAIMS:

Please amend the claims as follows:

Claim 1 (Original): An alkali metal generating agent as a supply source of an alkali metal used in formation of a photo-cathode for emitting a photoelectron corresponding to incident light or a secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said alkali metal generating agent comprising:

an oxidizer comprising at least one tungstate with an alkali metal ion as a counter cation;
and

a reducer for initiating a redox reaction with the oxidizer at a predetermined temperature to reduce the alkali metal ion,

wherein the substance amount ratio of the reducer with respect to the tungstate is 1.9 or more but 50.1 or less.

Claims 2-5 (Cancelled)

Claim 6 (Currently amended): An alkali metal generating agent according to claim 1, [[2, 4 or 5,]] wherein the reducer is at least one selected from the group consisting of Si, Zr, Ti, and Al.

Claim 7 (Currently amended): An alkali metal generating agent according to ~~any one of claims 1 to 3 and 6~~ claim 1, wherein the tungstate is expressed by a chemical formula R_2WO_4 , where R is at least one metal element selected from the group consisting of Na, K, Rb and Cs.

Claim 8 (Currently amended): An alkali metal generating agent according to ~~any one of claims 1 to 7~~ claim 1, the alkali metal generating agent being of a powder form.

Claim 9 (Currently amended): An alkali metal generating agent according to ~~any one of claims 1 to 7~~ claim 1, the alkali metal generating agent being formed in a pellet form having a predetermined shape by compression molding.

Claim 10 (Currently amended): An alkali metal generating device for generating an alkali metal used in formation of a photo-cathode for emitting a photoelectron corresponding to incident light or a secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said alkali metal generating device comprising:

a case;

a supply source housed in the case and comprising an alkali metal generating agent according to ~~any one of claims 1 to 9~~ claim 1; and

a discharge port provided in the case and adapted for discharging a vapor of the alkali metal generated in the supply source, from an interior space of the case housing the supply source, toward the exterior of the case.

Claim 11 (Original): An alkali metal generating device according to claim 10, wherein the case is made of a metal.

Claim 12 (Currently amended): An alkali metal generating device according to claim 10 [[or 11]], wherein the case comprises:

a hollow container of a metal having apertures at both ends and provided with the discharge port in a side face thereof; and

lid members of a metal covering the respective apertures at the both ends of the hollow container.

Claim 13 (Currently amended): An alkali metal generating device according to claim 10 [[or 11]], wherein the case is a hollow container of a metal having apertures at both ends thereof,

wherein the apertures at the both ends of the hollow container are hermetically closed in a state in which the hollow container secures an interior space for housing the alkali metal generating agent, and

wherein the discharge port is provided in at least one of the both ends of the hollow container hermetically closed.

Claim 14 (Currently amended): An alkali metal generating device according to claim 10 [[or 11]], wherein the alkali metal generating agent is formed in a pellet form having a predetermined shape,

wherein the case is comprised of a closed-end container of a metal having a recess for housing the alkali metal generating agent, and a lid member of a metal welded to the closed-end container in a state in which the lid member covers an aperture of the recess, and

wherein the discharge port of the case is formed in a non-welded portion between the closed-end container and the lid member.

Claim 15 (Currently amended): An alkali metal generating device according to ~~any one of claims 10 to 14~~ claim 10, further comprising a glass ampule housing the entire case.

Claim 16 (Currently amended): An alkali metal generating device according to ~~any one of claims 10 to 15~~ claim 10, further comprising a heating device for initiating the redox reaction of the alkali metal generating agent to generate the vapor of the alkali metal.

Claim 17 (Original): An alkali metal generating device according to claim 16, wherein the heating device comprises a high-frequency supply for heating the alkali metal generating agent by high-frequency heating.

Claim 18 (Currently amended) A photo-cathode for emitting a photoelectron corresponding to incident light, said photo-cathode comprising the alkali metal generated from an alkali metal generating agent according to ~~any one of claims 1 to 9~~ claim 1.

Claim 19 (Currently amended): A photo-cathode for emitting a photoelectron corresponding to incident light, said photo-cathode comprising the alkali metal generated from an alkali metal generating device according to ~~any one of claims 10 to 17~~ claim 10.

Claim 20 (Currently amended): A secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said secondary-electron emitting surface comprising the alkali metal generated from an alkali metal generating agent according to ~~any one of claims 1 to 9~~ claim 1.

Claim 21 (Currently amended): A secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said secondary-electron emitting surface comprising the alkali metal generated from an alkali metal generating device according to ~~any one of claims 10 to 17~~ claim 10.

Claim 22 (Currently amended): An electron tube comprising a photo-cathode according to claim 18 ~~[[or 19]]~~.

Claim 23 (Original) An electron tube according to claim 22, further comprising:
an electron multiplying part comprised of one or more dynodes each having a secondary-electron emitting surface for emitting secondary electrons in accordance with incidence of the photoelectron emitted from the photo-cathode; and

an anode for collecting the secondary electrons outputted from the electron multiplying part and extracting the collected secondary electrons as an electric current to the outside.

Claim 24 (Original): An electron tube according to claim 22, further comprising:

an anode for collecting the photoelectron emitted from the photo-cathode and extracting the collected photoelectron as an electric current to the outside.

Claim 25 (Original): An electron tube according to claim 22, said electron tube comprising an image tube having at least a fluorescent screen for converting the photoelectron emitted from the photo-cathode, into light.

Claim 26 (Original): An electron tube according to claim 22, further comprising a streak tube comprising:

an accelerating electrode for accelerating the photoelectron emitted from the photo-cathode;

a focusing electrode for focusing the photoelectron accelerated by the accelerating electrode;

an anode having an aperture through which the photoelectron focused by the focusing electrode can pass;

a deflecting electrode having a pair of electrode plates opposed to each other and adapted to be able to sweep the photoelectron having passed through the aperture provided in the anode, in a predetermined direction by a predetermined deflection voltage applied between the pair of electrode plates; and

a fluorescent screen for converting the photoelectron deflected by the deflecting electrode, into light.

Claim 27 (Currently amended): An electron tube comprising an electron multiplying part comprised of one or more dynodes each having a secondary-electron emitting surface according to claim 20 [[or 21]].

Claim 28 (Original): An electron tube according to claim 27, further comprising:

a photo-cathode for emitting a photoelectron corresponding to incident light, toward the electron multiplying part; and

an anode for collecting secondary electrons emitted from the electron multiplying part and extracting the collected secondary electrons as an electric current to the outside.

Claim 29 (Currently amended): A method of production of a photo-cathode comprising an alkali metal for emitting a photoelectron corresponding to incident light, said method comprising the steps of:

preparing an alkali metal generating agent according to ~~any one of claims 1 to 9~~ claim 1, as a source of the alkali metal;

heating the alkali metal generating agent; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the photo-cathode.

Claim 30 (Currently amended): A method of production of a photo-cathode comprising an alkali metal for emitting a photoelectron corresponding to incident light, said method comprising the steps of:

preparing an alkali metal generating device according to ~~any one of claims 10 to 17~~ claim 10, as a source of the alkali metal;

heating the alkali metal generating agent housed in the case of the alkali metal generating device; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the photo-cathode.

Claim 31 (Currently amended): A method of production of a secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said method comprising the steps of:

preparing an alkali metal generating agent according to ~~any one of claims 1 to 9~~ claim 1, as a source of the alkali metal;

heating the alkali metal generating agent; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the secondary-electron emitting surface.

Claim 32 (Currently amended): A method of production of a secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said method comprising the steps of:

preparing an alkali metal generating device according to ~~any one of claims 10 to 17~~ claim 10, as a source of the alkali metal;

heating the alkali metal generating agent housed in the case of the alkali metal generating device; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the secondary-electron emitting surface.

Claim 33 (Currently amended): A method of production of an electron tube comprising at least a photo-cathode comprising an alkali metal for emitting a photoelectron corresponding to incident light, said method comprising the steps of:

preparing an alkali metal generating agent according to ~~any one of claims 1 to 9~~ claim 1, as a source of the alkali metal;

heating the alkali metal generating agent; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the photo-cathode.

Claim 34 (Currently amended): A method of production of an electron tube comprising at least a photo-cathode comprising an alkali metal for emitting a photoelectron corresponding to incident light, said method comprising the steps of:

preparing an alkali metal generating device according to ~~any one of claims 10 to 17~~ claim 10, as a source of the alkali metal;

heating the alkali metal generating agent housed in the case of the alkali metal generating device; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the photo-cathode.

Claim 35 (Currently amended): A method of production of an electron tube according to claim 33 [[or 34]], wherein said electron tube comprises one selected from a photomultiplier tube, a photo-tube, an image tube, and a streak tube.

Claim 36 (Currently amended): A method of production of an electron tube comprising an electron multiplying part comprised of one or more dynodes each having a secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said method comprising the steps of:

preparing an alkali metal generating agent according to ~~any one of claims 1 to 9~~ claim 1, as a source of the alkali metal;

heating the alkali metal generating agent; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the secondary-electron emitting surface.

Claim 37 (Currently amended): A method of production of an electron tube comprising an electron multiplying part comprised of one or more dynodes each having a secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said method comprising the steps of:

preparing an alkali metal generating device according to ~~any one of claims 10 to 17~~ claim 10, as a source of the alkali metal;

heating the alkali metal generating agent housed in the case of the alkali metal generating device; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the secondary-electron emitting surface.

Claim 38 (Currently amended): A method of production of an electron tube according to claim 36 [[or 37]], wherein said electron tube comprises one selected from a photomultiplier tube, an image tube, and a streak tube.

Claim 39 (New): An alkali metal generating agent as a supply source of an alkali metal used in formation of a photo-cathode for emitting a photoelectron corresponding to incident light or a secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said alkali metal generating agent comprising:

an oxidizer comprising at least one tungstate with an alkali metal ion as a counter cation; and

a reducer for initiating a redox reaction with the oxidizer at a predetermined temperature to reduce the alkali metal ion,

wherein the substance amount ratio of the reducer with respect to the tungstate is 4.0 or more but 50.1 or less.

Claim 40 (New): An alkali metal generating agent according to claim 39, wherein the reducer is at least one selected from the group consisting of Si, Zr, Ti, and Al.

Claim 41 (New): An alkali metal generating agent according to claim 39, wherein the tungstate is expressed by a chemical formula R_2WO_4 , where R is at least one metal element selected from the group consisting of Na, K, Rb and Cs.

Claim 42 (New): An alkali metal generating agent according to claim 39, the alkali metal generating agent being of a powder form.

Claim 43 (New): An alkali metal generating agent according to claim 39, the alkali metal generating agent being formed in a pellet form having a predetermined shape by compression molding.

Claim 44 (New): An alkali metal generating device for generating an alkali metal used in formation of a photo-cathode for emitting a photoelectron corresponding to incident light or a secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said alkali metal generating device comprising:

a case;

a supply source housed in the case and comprising an alkali metal generating agent according to claim 39; and

a discharge port provided in the case and adapted for discharging a vapor of the alkali metal generated in the supply source, from an interior space of the case housing the supply source, toward the exterior of the case.

Claim 45 (New): An alkali metal generating device according to claim 44, wherein the case is made of a metal.

Claim 46 (New): An alkali metal generating device according to claim 44, wherein the case comprises:

a hollow container of a metal having apertures at both ends and provided with the discharge port in a side face thereof; and

lid members of a metal covering the respective apertures at the both ends of the hollow container.

Claim 47 (New): An alkali metal generating device according to claim 44, wherein the case is a hollow container of a metal having apertures at both ends thereof,

wherein the apertures at the both ends of the hollow container are hermetically closed in a state in which the hollow container secures an interior space for housing the alkali metal generating agent, and

wherein the discharge port is provided in at least one of the both ends of the hollow container hermetically closed.

Claim 48 (New): An alkali metal generating device according to claim 44, wherein the alkali metal generating agent is formed in a pellet form having a predetermined shape,

wherein the case is comprised of a closed-end container of a metal having a recess for housing the alkali metal generating agent, and a lid member of a metal welded to the closed-end container in a state in which the lid member covers an aperture of the recess, and

wherein the discharge port of the case is formed in a non-welded portion between the closed-end container and the lid member.

Claim 49 (New): An alkali metal generating device according to claim 44, further comprising a glass ampule housing the entire case.

Claim 50 (New): An alkali metal generating device according to claim 44, further comprising a heating device for initiating the redox reaction of the alkali metal generating agent to generate the vapor of the alkali metal.

Claim 51 (New): An alkali metal generating device according to claim 50, wherein the heating device comprises a high-frequency supply for heating the alkali metal generating agent by high-frequency heating.

Claim 52 (New): A photo-cathode for emitting a photoelectron corresponding to incident light, said photo-cathode comprising the alkali metal generated from an alkali metal generating agent according to claim 39.

Claim 53 (New): A photo-cathode for emitting a photoelectron corresponding to incident light, said photo-cathode comprising the alkali metal generated from an alkali metal generating device according to claim 44.

Claim 54 (New): A secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said secondary-electron emitting surface comprising the alkali metal generated from an alkali metal generating agent according to claim 39.

Claim 55(New): A secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said secondary-electron emitting surface comprising the alkali metal generated from an alkali metal generating device according to claim 44.

Claim 56 (New): An electron tube comprising a photo-cathode according to claim 52.

Claim 57 (New): An electron tube according to claim 56, further comprising:

an electron multiplying part comprised of one or more dynodes each having a secondary-electron emitting surface for emitting secondary electrons in accordance with incidence of the photoelectron emitted from the photo-cathode; and

an anode for collecting the secondary electrons outputted from the electron multiplying part and extracting the collected secondary electrons as an electric current to the outside.

Claim 58 (New): An electron tube according to claim 56, further comprising:

an anode for collecting the photoelectron emitted from the photo-cathode and extracting the collected photoelectron as an electric current to the outside.

Claim 59 (New): An electron tube according to claim 56, said electron tube comprising an image tube having at least a fluorescent screen for converting the photoelectron emitted from the photo-cathode, into light.

Claim 60 (New): An electron tube according to claim 56, further comprising a streak tube comprising:

an accelerating electrode for accelerating the photoelectron emitted from the photo-cathode;

a focusing electrode for focusing the photoelectron accelerated by the accelerating electrode;

an anode having an aperture through which the photoelectron focused by the focusing electrode can pass;

a deflecting electrode having a pair of electrode plates opposed to each other and adapted to be able to sweep the photoelectron having passed through the aperture provided in the anode, in a predetermined direction by a predetermined deflection voltage applied between the pair of electrode plates; and

a fluorescent screen for converting the photoelectron deflected by the deflecting electrode, into light.

Claim 61 (New): An electron tube comprising an electron multiplying part comprised of one or more dynodes each having a secondary-electron emitting surface according to claim 54.

Claim 62 (New): An electron tube according to claim 61, further comprising:
a photo-cathode for emitting a photoelectron corresponding to incident light, toward the electron multiplying part; and

an anode for collecting secondary electrons emitted from the electron multiplying part and extracting the collected secondary electrons as an electric current to the outside.

Claim 63 (New): A method of production of a photo-cathode comprising an alkali metal for emitting a photoelectron corresponding to incident light, said method comprising the steps of:
preparing an alkali metal generating agent according to claim 39, as a source of the alkali metal;

heating the alkali metal generating agent; and
guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the photo-cathode.

Claim 64 (New): A method of production of a photo-cathode comprising an alkali metal for emitting a photoelectron corresponding to incident light, said method comprising the steps of:
preparing an alkali metal generating device according to claim 44, as a source of the alkali metal;

heating the alkali metal generating agent housed in the case of the alkali metal generating device; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the photo-cathode.

Claim 65 (New): A method of production of a secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said method comprising the steps of:

preparing an alkali metal generating agent according to claim 39, as a source of the alkali metal;

heating the alkali metal generating agent; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the secondary-electron emitting surface.

Claim 66 (New): A method of production of a secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said method comprising the steps of:

preparing an alkali metal generating device according to claim 44, as a source of the alkali metal;

heating the alkali metal generating agent housed in the case of the alkali metal generating device; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the secondary-electron emitting surface.

Claim 67 (New): A method of production of an electron tube comprising at least a photocathode comprising an alkali metal for emitting a photoelectron corresponding to incident light, said method comprising the steps of:

preparing an alkali metal generating agent according to claim 39, as a source of the alkali metal;

heating the alkali metal generating agent; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the photo-cathode.

Claim 68 (New): A method of production of an electron tube comprising at least a photo-cathode comprising an alkali metal for emitting a photoelectron corresponding to incident light, said method comprising the steps of:

preparing an alkali metal generating device according to claim 44, as a source of the alkali metal;

heating the alkali metal generating agent housed in the case of the alkali metal generating device; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the photo-cathode.

Claim 69 (New): A method of production of an electron tube according to claim 67, wherein said electron tube comprises one selected from a photomultiplier tube, a photo-tube, an image tube, and a streak tube.

Claim 70 (New): A method of production of an electron tube comprising an electron multiplying part comprised of one or more dynodes each having a secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said method comprising the steps of:

preparing an alkali metal generating agent according to claim 39, as a source of the alkali metal;

heating the alkali metal generating agent; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the secondary-electron emitting surface.

Claim 71 (New): A method of production of an electron tube comprising an electron multiplying part comprised of one or more dynodes each having a secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said method comprising the steps of:

preparing an alkali metal generating device according to claim 44, as a source of the alkali metal;

heating the alkali metal generating agent housed in the case of the alkali metal generating device; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the secondary-electron emitting surface.

Claim 72 (New): A method of production of an electron tube according to claim 70, wherein said electron tube comprises one selected from a photomultiplier tube, an image tube, and a streak tube.

Claim 73 (New): An alkali metal generating agent as a supply source of an alkali metal used in formation of a photo-cathode for emitting a photoelectron corresponding to incident light or a secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said alkali metal generating agent comprising:

an oxidizer comprising at least one tungstate with an alkali metal ion as a counter cation; and

a reducer of Si for initiating a redox reaction with the oxidizer at a predetermined temperature to reduce the alkali metal ion.

Claim 74 (New): An alkali metal generating agent according to claim 73, wherein the tungstate is expressed by a chemical formula R_2WO_4 , where R is at least one metal element selected from the group consisting of Na, Ka, Rb and Cs.

Claim 75 (New): An alkali metal generating agent according to claim 73, the alkali metal generating agent being of a powder form.

Claim 76 (New): An alkali metal generating agent according to claim 73, the alkali metal generating agent being formed in a pellet form having a predetermined shape by compression molding.

Claim 77 (New): An alkali metal generating device for generating an alkali metal used in formation of a photo-cathode for emitting a photoelectron corresponding to incident light or a secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said alkali metal generating device comprising:

a case;

a supply source housed in the case and comprising an alkali metal generating agent according to claim 73; and

a discharge port provided in the case and adapted for discharging a vapor of the alkali metal generated in the supply source, from an interior space of the case housing the supply source, toward the exterior of the case.

Claim 78 (New): An alkali metal generating device according to claim 77, wherein the case is made of a metal.

Claim 79 (New): An alkali metal generating device according to claim 77, wherein the case comprises:

a hollow container of a metal having apertures at both ends and provided with the discharge port in a side face thereof; and

lid members of a metal covering the respective apertures at the both ends of the hollow container.

Claim 80 (New): An alkali metal generating device according to claim 77, wherein the case is a hollow container of a metal having apertures at both ends thereof,

wherein the apertures at the both ends of the hollow container are hermetically closed in a state in which the hollow container secures an interior space for housing the alkali metal generating agent, and

wherein the discharge port is provided in at least one of the both ends of the hollow container hermetically closed..

Claim 81 (New): An alkali metal generating device according to claim 77, wherein the alkali metal generating agent is formed in a pellet form having a predetermined shape,

wherein the case is comprised of a closed-end container of a metal having a recess for housing the alkali metal generating agent, and a lid member of a metal welded to the closed-end container in a state in which the lid member covers an aperture of the recess, and

wherein the discharge port of the case is formed in a non-welded portion between the closed-end container and the lid member.

Claim 82 (New): An alkali metal generating device according to claim 77, further comprising a glass ampule housing the entire case.

Claim 83 (New): An alkali metal generating device according to claim 77, further comprising a heating device for initiating the redox reaction of the alkali metal generating agent to generate the vapor of the alkali metal.

Claim 84 (New): An alkali metal generating device according to claim 83, wherein the heating device comprises a high-frequency supply for heating the alkali metal generating agent by high-frequency heating.

Claim 85 (New): A photo-cathode for emitting a photoelectron corresponding to incident light, said photo-cathode comprising the alkali metal generated from an alkali metal generating agent according to claim 73.

Claim 86 (New): A photo-cathode for emitting a photoelectron corresponding to incident light, said photo-cathode comprising the alkali metal generated from an alkali metal generating device according to claim 77.

Claim 87 (New): A secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said secondary-electron emitting surface comprising the alkali metal generated from an alkali metal generating agent according to claim 73.

Claim 88 (New): A secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said secondary-electron emitting surface comprising the alkali metal generated from an alkali metal generating device according to claim 77.

Claim 89 (New): An electron tube comprising a photo-cathode according to claim 85.

Claim 90 (New): An electron tube according to claim 89, further comprising:

an electron multiplying part comprised of one or more dynodes each having a secondary-electron emitting surface for emitting secondary electrons in accordance with incidence of the photoelectron emitted from the photo-cathode; and

an anode for collecting the secondary electrons outputted from the electron multiplying part and extracting the collected secondary electrons as an electric current to the outside.

Claim 91 (New): An electron tube according to claim 89, further comprising:

an anode for collecting the photoelectron emitted from the photo-cathode and extracting the collected photoelectron as an electric current to the outside.

Claim 92 (New): An electron tube according to claim 89, said electron tube comprising an image tube having at least a fluorescent screen for converting the photoelectron emitted from the photo-cathode, into light.

Claim 93 (New): An electron tube according to claim 89, further comprising a streak tube comprising:

an accelerating electrode for accelerating the photoelectron emitted from the photo-cathode;

a focusing electrode for focusing the photoelectron accelerated by the accelerating electrode;

an anode having an aperture through which the photoelectron focused by the focusing electrode can pass;

a deflecting electrode having a pair of electrode plates opposed to each other and adapted to be able to sweep the photoelectron having passed through the aperture provided in the anode, in a predetermined direction by a predetermined deflection voltage applied between the pair of electrode plates; and

a fluorescent screen for converting the photoelectron deflected by the deflecting electrode, into light.

Claim 94 (New): An electron tube comprising an electron multiplying part comprised of one or more dynodes each having a secondary-electron emitting surface according to claim 87.

Claim 95 (New): An electron tube according to claim 94, further comprising:

a photo-cathode for emitting a photoelectron corresponding to incident light, toward the electron multiplying part; and

an anode for collecting secondary electrons emitted from the electron multiplying part and extracting the collected secondary electrons as an electric current to the outside.

Claim 96 (New): A method of production of a photo-cathode comprising an alkali metal for emitting a photoelectron corresponding to incident light, said method comprising the steps of: preparing an alkali metal generating agent according to claim 73, as a source of the alkali metal;

heating the alkali metal generating agent; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the photo-cathode.

Claim 97 (New): A method of production of a photo-cathode comprising an alkali metal for emitting a photoelectron corresponding to incident light, said method comprising the steps of: preparing an alkali metal generating device according to claim 77, as a source of the alkali metal;

heating the alkali metal generating agent housed in the case of the alkali metal generating device; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the photo-cathode.

Claim 98 (New): A method of production of a secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said method comprising the steps of:

preparing an alkali metal generating agent according to claim 73, as a source of the alkali metal;

heating the alkali metal generating agent; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the secondary-electron emitting surface.

Claim 99 (New): A method of production of a secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said method comprising the steps of:

preparing an alkali metal generating device according to claim 77, as a source of the alkali metal;

heating the alkali metal generating agent housed in the case of the alkali metal generating device; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the secondary-electron emitting surface.

Claim 100 (New): A method of production of an electron tube comprising at least a photo-cathode comprising an alkali metal for emitting a photoelectron corresponding to incident light, said method comprising the steps of:

preparing an alkali metal generating agent according to claim 73, as a source of the alkali metal;

heating the alkali metal generating agent; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the photo-cathode.

Claim 101 (New): A method of production of an electron tube comprising at least a photo-cathode comprising an alkali metal for emitting a photoelectron corresponding to incident light, said method comprising the steps of:

preparing an alkali metal generating device according to claim 77, as a source of the alkali metal;

heating the alkali metal generating agent housed in the case of the alkali metal generating device; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the photo-cathode.

Claim 102 (New): A method of production of an electron tube according to claim 100, wherein said electron tube comprises one selected from a photomultiplier tube, a photo-tube, an image tube, and a streak tube.

Claim 103 (New): A method of production of an electron tube comprising an electron multiplying part comprised of one or more dynodes each having a secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said method comprising the steps of:

preparing an alkali metal generating agent according to claim 73, as a source of the alkali metal;

heating the alkali metal generating agent; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the secondary-electron emitting surface.

Claim 104 (New): A method of production of an electron tube comprising an electron multiplying part comprised of one or more dynodes each having a secondary-electron emitting

surface for emitting secondary electrons corresponding to an incident electron, said method comprising the steps of:

preparing an alkali metal generating device according to claim 77, as a source of the alkali metal;

heating the alkali metal generating agent housed in the case of the alkali metal generating device; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the secondary-electron emitting surface.

Claim 105 (New): A method of production of an electron tube according to claim 103, wherein said electron tube comprises one selected from a photomultiplier tube, an image tube, and a streak tube.

Claim 106 (New): An alkali metal generating agent as a supply source of an alkali metal which comprises at least Cs and is used in formation of a photo-cathode for emitting a photoelectron corresponding to incident light or a secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said alkali metal generating agent comprising:

an oxidizer comprising at least one tungstate with an alkali metal ion as a counter cation; and

a reducer for initiating a redox reaction with the oxidizer at a predetermined temperature to reduce the alkali metal ion.

Claim 107 (New): An alkali metal generating agent according to claim 106, wherein the tungstate is expressed by a chemical formula R_2WO_4 , where R is Cs only or a metal element comprising Cs together with at least one selected from the group consisting of Na, K and Rb.

Claim 108 (New): An alkali metal generating agent according to claim 106, wherein the reducer is at least one selected from the group consisting of Si, Zr, Ti, and Al.

Claim 109 (New): An alkali metal generating agent according to claim 106, the alkali metal generating agent being of a powder form.

Claim 110 (New): An alkali metal generating agent according to claim 106, the alkali metal generating agent being formed in a pellet form having a predetermined shape by compression molding.

Claim 111 (New): An alkali metal generating device for generating an alkali metal used in formation of a photo-cathode for emitting a photoelectron corresponding to incident light or a secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said alkali metal generating device comprising:

- a case;

- a supply source housed in the case and comprising an alkali metal generating agent according to claim 106; and

- a discharge port provided in the case and adapted for discharging a vapor of the alkali metal generated in the supply source, from an interior space of the case housing the supply source, toward the exterior of the case.

Claim 112 (New): An alkali metal generating device according to claim 111, wherein the case is made of a metal.

Claim 113 (New): An alkali metal generating device according to claim 111, wherein the case comprises:

- a hollow container of a metal having apertures at both ends and provided with the discharge port in a side face thereof; and

lid members of a metal covering the respective apertures at the both ends of the hollow container.

Claim 114 (New): An alkali metal generating device according to claim 111, wherein the case is a hollow container of a metal having apertures at both ends thereof,

wherein the apertures at the both ends of the hollow container are hermetically closed in a state in which the hollow container secures an interior space for housing the alkali metal generating agent, and

wherein the discharge port is provided in at least one of the both ends of the hollow container hermetically closed.

Claim 115 (New): An alkali metal generating device according to claim 111, wherein the alkali metal generating agent is formed in a pellet form having a predetermined shape,

wherein the case is comprised of a closed-end container of a metal having a recess for housing the alkali metal generating agent, and a lid member of a metal welded to the closed-end container in a state in which the lid member covers an aperture of the recess, and

wherein the discharge port of the case is formed in a non-welded portion between the closed-end container and the lid member.

Claim 116 (New): An alkali metal generating device according to claim 111, further comprising a glass ampule housing the entire case.

Claim 117 (New): An alkali metal generating device according to claim 111, further comprising a heating device for initiating the redox reaction of the alkali metal generating agent to generate the vapor of the alkali metal.

Claim 118 (New): An alkali metal generating device according to claim 117, wherein the heating device comprises a high-frequency supply for heating the alkali metal generating agent by high-frequency heating.

Claim 119 (New): A photo-cathode for emitting a photoelectron corresponding to incident light, said photo-cathode comprising the alkali metal generated from an alkali metal generating agent according to claim 106.

Claim 120 (New): A photo-cathode for emitting a photoelectron corresponding to incident light, said photo-cathode comprising the alkali metal generated from an alkali metal generating device according to claim 111.

Claim 121 (New): A secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said secondary-electron emitting surface comprising the alkali metal generated from an alkali metal generating agent according to claim 106.

Claim 122 (New): A secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said secondary-electron emitting surface comprising the alkali metal generated from an alkali metal generating device according to claim 111.

Claim 123 (New): An electron tube comprising a photo-cathode according to claim 119.

Claim 124 (New): An electron tube according to claim 123, further comprising:
an electron multiplying part comprised of one or more dynodes each having a secondary-electron emitting surface for emitting secondary electrons in accordance with incidence of the photoelectron emitted from the photo-cathode; and

an anode for collecting the secondary electrons outputted from the electron multiplying part and extracting the collected secondary electrons as an electric current to the outside.

Claim 125 (New): An electron tube according to claim 123, further comprising:

an anode for collecting the photoelectron emitted from the photo-cathode and extracting the collected photoelectron as an electric current to the outside.

Claim 126 (New): An electron tube according to claim 123, said electron tube comprising an image tube having at least a fluorescent screen for converting the photoelectron emitted from the photo-cathode, into light.

Claim 127 (New): An electron tube according to claim 123, further comprising a streak tube comprising:

an accelerating electrode for accelerating the photoelectron emitted from the photo-cathode;

a focusing electrode for focusing the photoelectron accelerated by the accelerating electrode;

an anode having an aperture through which the photoelectron focused by the focusing electrode can pass;

a deflecting electrode having a pair of electrode plates opposed to each other and adapted to be able to sweep the photoelectron having passed through the aperture provided in the anode, in a predetermined direction by a predetermined deflection voltage applied between the pair of electrode plates; and

a fluorescent screen for converting the photoelectron deflected by the deflecting electrode, into light.

Claim 128 (New): An electron tube comprising an electron multiplying part comprised of one or more dynodes each having a secondary-electron emitting surface according to claim 121.

Claim 129 (New): An electron tube according to claim 128, further comprising:
a photo-cathode for emitting a photoelectron corresponding to incident light, toward the electron multiplying part; and
an anode for collecting secondary electrons emitted from the electron multiplying part and extracting the collected secondary electrons as an electric current to the outside.

Claim 130 (New): A method of production of a photo-cathode comprising an alkali metal for emitting a photoelectron corresponding to incident light, said method comprising the steps of:

preparing an alkali metal generating agent according to claim 106, as a source of the alkali metal;
heating the alkali metal generating agent; and
guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the photo-cathode.

Claim 131 (New): A method of production of a photo-cathode comprising an alkali metal for emitting a photoelectron corresponding to incident light, said method comprising the steps of:

preparing an alkali metal generating device according to claim 111, as a source of the alkali metal;
heating the alkali metal generating agent housed in the case of the alkali metal generating device; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the photo-cathode.

Claim 132 (New): A method of production of a secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said method comprising the steps of:

preparing an alkali metal generating agent according to claim 106, as a source of the alkali metal;

heating the alkali metal generating agent; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the secondary-electron emitting surface.

Claim 133 (New): A method of production of a secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said method comprising the steps of:

preparing an alkali metal generating device according to claim 111, as a source of the alkali metal;

heating the alkali metal generating agent housed in the case of the alkali metal generating device; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the secondary-electron emitting surface.

Claim 134 (New): A method of production of an electron tube comprising at least a photo-cathode comprising an alkali metal for emitting a photoelectron corresponding to incident light, said method comprising the steps of:

preparing an alkali metal generating agent according to claim 106, as a source of the alkali metal;

heating the alkali metal generating agent; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the photo-cathode.

Claim 135 (New): A method of production of an electron tube comprising at least a photo-cathode comprising an alkali metal for emitting a photoelectron corresponding to incident light, said method comprising the steps of:

preparing an alkali metal generating device according to claim 111, as a source of the alkali metal;

heating the alkali metal generating agent housed in the case of the alkali metal generating device; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to an area for formation of the photo-cathode.

Claim 136 (New): A method of production of an electron tube according to claim 134, wherein said electron tube comprises one selected from a photomultiplier tube, a photo-tube, an image tube, and a streak tube.

Claim 137 (New): A method of production of an electron tube comprising an electron multiplying part comprised of one or more dynodes each having a secondary-electron emitting surface for emitting secondary electrons corresponding to an incident electron, said method comprising the steps of:

preparing an alkali metal generating agent according to claim 106, as a source of the alkali metal;

heating the alkali metal generating agent; and
guiding the alkali metal generated by the heating of the alkali metal generating agent, to
an area for formation of the secondary-electron emitting surface.

Claim 138 (New): A method of production of an electron tube comprising an electron
multiplying part comprised of one or more dynodes each having a secondary-electron emitting
surface for emitting secondary electrons corresponding to an incident electron, said method
comprising the steps of:

preparing an alkali metal generating device according to claim 111, as a source of the
alkali metal;

heating the alkali metal generating agent housed in the case of the alkali metal generating
device; and

guiding the alkali metal generated by the heating of the alkali metal generating agent, to
an area for formation of the secondary-electron emitting surface.

Claim 139 (New): A method of production of an electron tube according to claim 137,
wherein said electron tube comprises one selected from a photomultiplier tube, an image tube,
and a streak tube.